Headline: People drive more when COE prices rise
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People drive more when COE prices rise

ASK: NUS ECONOMISTS

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■ *The COE system has been in place for more than 20 years and yet the roads are still so crowded. Has it really been effective in controlling congestion?*

LIKE many other cities, Singapore faces the challenge of managing traffic congestion. Since 1975, the Government has addressed the problem in two ways – pricing road usage and limiting the vehicle population. From 1990, the Government has explicitly limited the number of new car registrations to a monthly quota for Certificates of Entitlement (COEs).

At the last auction, the price of COEs (strictly, the COE quota premium) for large cars reached $90,501. COE prices have not been so high since late 1994. The result has been hand-wringing, howls of complaint and a torrent of letters to The Straits Times.

Quickly moving to assuage public concerns, Minister of Transport Lui Tuck Yew is talking of tweaking the system to moderate the inflation in COE prices. The latest change is to remove taxis from the bidding process for COEs in the small car category. Instead of bidding, taxis will pay the prevailing quota premium, and the quota will come from the Open category which can be used for any size of cars.

Yet, there seems to be little discussion of the more fundamental issue. Just how effective is the COE system in managing traffic congestion?

The essential problem of traffic congestion is what economists would call a "negative externality". With a fixed quantity of road space, each additional vehicle adds to the demand for the fixed road space, and increases congestion for every other vehicle. But the driver of the additional vehicle considers only his own benefits and costs, and ignores the costs (the externality) on other road users.

Taxing the purchase of new vehicles (through the Additional Registration Fee or ARF) and directly limiting new vehicles (through the COE) are very crude ways of regulating the congestion externality. Just consider people who live and work in suburban areas. They may cause little traffic congestion, yet they must pay the same ARF and COE.

Moreover, in ongoing research, my NUS colleagues, Professor Ho Teck Hua and Dr Sadat Reza, and I have found that the ARF and COE systems have caused new car buyers to drive more. So, policies to reduce congestion were counterproductive to some extent.

Consider, for example, a Toyota Camry. Last August, its Open Market Value (OMV) was $22,504. The ARF (100 per cent of OMV) was $22,504, while the COE was $70,890. Together with various other taxes, the cost of the car before dealer's markup was $122,429.

On registering a new Camry, the owner would incur two losses. The maximum Preferential Additional Registration Fee (PARF) rebate is 75 per cent of the ARF, so the owner would immediately lose 25 per cent or $5,626 on the ARF. The maximum COE rebate is 80 per cent of the COE quota premium, so the owner would immediately lose 20 per cent or $14,178 on the COE. In economic terms, the total sunk cost (related to ARF and COE) would be $19,804.

With the COE quota premium rising to $90,501, the COE-related sunk cost would be $18,100. So, assuming the same OMV and ARF, the total sunk cost would be $23,726, which is an increase of about 20 per cent over the level last August.

In our research, we also analysed service records of one make of cars between 2002 and 2009, and found that car owners who had incurred larger sunk costs increased their driving. The reason seems to be psychological. In their minds, car buyers felt that they must rationalise the larger sunk cost, and so they drove their cars more.

Research has found that a 1 per cent rise in the sunk cost of buying a new car led the owner to drive 0.345 per cent more kilometres each month, making policies to reduce traffic congestion counterproductive. ST PHOTO: ALPHONSUS CHERN

Using the statistical technique of multiple regression (which controlled for other relevant factors including petrol costs and congestion), we estimated that the elasticity of monthly mileage with respect to the sunk costs of buying a new car was 0.345. This elasticity meant that a 1 per cent increase in the sunk cost of buying a new car led the owner to drive 0.345 per cent more kilometres each month.

If we apply this elasticity to the 20 per cent increase in sunk cost due to the recent inflation in COE prices, it implies that car owners would increase driving by 6.9 per cent. This would be bad for traffic, but not quite as bad as having another 6.9 per cent or 41,000 cars on the road – because it would be additional driving, not additional cars.

So, get ready for even more congestion on the roads – during off-peak hours and on weekends. Or higher ERP rates, as the Land Transport Authority adjusts electronic road pricing to manage the congestion. Or both.

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